PATENT
Attorney docket No.: P55890A

#3 Pre Amdt H 4-23-02

CLEAN VERSION OF AMENDMENTS

IN THE TITLE

Please change the title, to read as follows:

-- OPTICAL FIBER PREFORM MANUFACTURING METHOD FOR SHRINKAGE AND CLOSING OF DEPOSITED TUBE --.

IN THE SPECIFICATION

1. On page 1, underneath the title, before the Claim of Priority section, please insert the following paragraph:

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-- CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional application of U.S. Patent Application Serial No. 09/457,392 filed on 9 December 1999. This related application is relied on and incorporated herein by references in its entirety.--

2. Please amend the paragraph bridging page 8 and 9, from line 12 on page 8 through line 8 on page 9, to read as follows:

a 2

Fig. 1 is a view illustrating a deposition apparatus suitable for an MCVD process. This deposition apparatus is used to deposit a reaction product of raw material gas in the inner surface of

a preform tube. Referring to Fig. 1, a lathe 11 is illustrated which serves to support a preform tube 12. A heating means 14 heats partially the preform tube 12 when viewed in both the longitudinal and circumferential directions of the preform tube 12. In Fig. 1, the region where the preform tube is heated is denoted by the reference numeral 13. The preform tube 12 rotates in a direction, for example, the direction indicated by the arrow 15a in Fig. 1. The heating means 14 moves on track 16 in directions indicated by the arrows 15b in Fig. 1 in accordance with the operation of a moving member (not shown). Accordingly, the heating region 13 is defined while not only moving along the entire length of the preform tube 12, but also rotating around the circumference of the preform tube 12. Raw material gas is introduced from a raw material gas supply unit 19 into the preform tube 12 via an input tube 17. The raw material gas supply unit 19 contains a reactant of a liquid phase therein and supplies this reactant to the preform tube 12 using carriage gas. Exhaust materials are discharged from the preform tube 12 through an outlet 18. The flow rate of the raw material gas is controlled by a mixing valve (not shown) and a shutoff valve (not shown).

3. Please amend the paragraph bridging page 11 and 12, from line 8 on page 11 through line 1 on page 12, to read as follows:

The optical fiber preform manufacturing apparatus also includes a control unit not shown. The control unit performs control operations for the processes of shrinking and closing the deposited tube 20b. That is, the control unit sets the heating temperature of the circular heater 24 to a desired temperature, and rotates the deposited tube 20b supported between the upper and lower support members 22 and 23 at a desired speed while vertically moving the circular heater 24. The heating

a3 temperature of the circular heater 24 is first adjusted to be lower than the softening point of the deposited tube 20b. In this state, the circular heater 24 is moved at a desired speed. During the movement of the circular heater 24, contaminants existing in the deposited tube 20b are then exhausted in accordance with an operation of the vacuum pump 27. Thereafter, the heating temperature of the circular heater 24 is adjusted again so that it is not lower than the softening point of the deposited tube 20b. In this state, the processes of shrinking and closing the deposited tube 20b is carried out. Where a furnace is used for the circular heater 24, inert gas such as argon or nitrogen is supplied to the furnace in order to prevent an oxidation thereof at a heat generating region.

4. Please amend the paragraph bridging page 12 and 13, from line 10 on page 12 through line 8 on page 13, to read as follows:

a4 In accordance with this method, a clad layer and a core layer are first deposited on the inner surface of a preform tube horizontally arranged, using the apparatus shown in Fig. 1, thereby forming a deposited tube (Step 31). Thereafter, the deposited tube is locally heated at one end thereof corresponding to a region where chemical raw gas is exhausted during the deposition process, thereby causing the end to be sealed (Step 32). A rod is horizontally joined to the sealed end of the deposited tube (Step 33). The rod-joined deposited tube is separated from the lathe, and then fed to the tube shrinking/closing lathe shown in Fig. 2. In the tube shrinking/closing lathe, the deposited tube is then vertically arranged in such a fashion that it extends vertically through the circular heater while the rod is upwardly directed (Step 34). Subsequently, the circular heater is moved to the joint between the deposited tube and rod. The heating temperature of the circular